

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus for asynchronous file-based replication of a hierarchically-indexed data store, the apparatus comprising:

a computing device for data replication, the computing device comprising:

~~a replication source comprising~~ a hierarchically-indexed data store;

a file system driver ~~tracking module~~ configured to access the data store and track file regions that have changed since a first point-in-time image replication instance; and

a replication module configured to communicate data contained within changed file regions in response to a second point-in-time image replication instance.

2. (Original) The apparatus of claim 1, further comprising a replication target configured to receive the data contained within the changed file regions from the replication source, write the data within corresponding files regions on the replication target, and initiate a point-in-time image replication operation configured to synchronize the replication target with the replication source.

3. (Original) The apparatus of claim 1, wherein the replication module is further configured to communicate the data contained within the changed file regions in an order that is independent of a change order.

4. (Original) The apparatus of claim 1, wherein the replication module is further configured to conduct replication operations as directed by policies related to replication.

5. (Original) The apparatus of claim 1, further comprising a storage management module configured to set policies related to replication.

6. (Original) The apparatus of claim 1, wherein the hierarchically-indexed data store comprises a hierarchical structure corresponding to a file system.
7. (Original) The apparatus of claim 1, further comprising a point-in-time image replication module configured to provide point-in-time image replication services to the hierarchically-indexed data store.
8. (Original) The apparatus of claim 1, wherein the tracking module is further configured to save information regarding the file regions that have changed since the first point-in-time image replication instance.
9. (Canceled)
10. (Currently Amended) The apparatus of claim ~~8~~ 1, wherein the file system driver is an installable driver.
11. (Original) The apparatus of claim 1, wherein the point-in-time image replication comprises a snapshot of the root node.
12. (Canceled)
13. (Canceled)

14. (Currently Amended) A method for asynchronous file-based replication of a hierarchically-indexed data store, the method comprising:

storing data on a hierarchically-indexed data store;

using a file system driver to track ~~tracking~~ file regions that have changed since a first point-in-time image replication instance;

communicating data contained within changed file regions to a replication data store in response to a second point-in-time image replication instance.

15. (Original) The method of claim 14, further comprising receiving data within the changed file regions from a replication source, writing the data within corresponding files regions on a replication target, and initiating a point-in-time image replication operation configured to synchronize the replication target with the replication source.

16. (Currently Amended) An apparatus for asynchronous file-based replication of a hierarchically-indexed data store, the apparatus comprising:

means for storing data on a hierarchically-indexed data store;

a file system driver configured to track ~~means for tracking~~ file regions that have changed since a first point-in-time image replication instance; and

means for communicating data contained within changed file regions in response to a second point-in-time image replication instance.

17. (Original) The apparatus of claim 16, further comprising means for receiving data within the changed file regions from a replication source, means for writing the data within corresponding files regions on a replication target, and means for initiating a point-in-time image replication operation configured to synchronize the replication target with the replication source.

18. (Currently Amended) A system for asynchronous file-based replication of a hierarchically-indexed data store, the system comprising:

- a replication target comprising a CPU and a first hierarchically-indexed data store;
- a replication source comprising a CPU and a second hierarchically-indexed data store;
- a file system driver ~~tracking module~~ configured to track file regions that have changed on the replication source since a first point-in-time image replication instance; and
- a replication module configured to communicate data within changed file regions to the replication target in response to a second point-in-time image replication instance.

19. (Original) The system of claim 18, wherein the replication target is further configured to receive the data within changed file regions from the replication source, write the data within corresponding files regions on the replication target and initiate a point-in-time image replication operation configured to synchronize the replication target with the replication source.

20. (Original) The system of claim 18, wherein the replication module is further configured to communicate data contained within the changed file regions by communicating the data in an order that is independent of a write order.

21. (Currently Amended) A computer readable storage medium storing computer readable program code for conducting a method for asynchronous file-based replication of a hierarchically-indexed data store, the method comprising:

- storing data on a hierarchically-indexed data store;
- using a file system driver to track ~~tracking~~ file regions that have changed since a first point-in-time image replication instance;
- communicating data contained within changed file regions in response to a second point-in-time image replication instance; and

synchronizing with a replication target via a standard point-in-time image replication operation.

22. (Original) The computer readable storage medium of claim 21, wherein the method further comprises receiving data within the changed file regions from a replication source, writing the data within corresponding files regions on a replication target, and initiating a point-in-time image replication operation configured to synchronize the replication target with the replication source.

23. (Original) The computer readable storage medium of claim 21, wherein the method further comprises communicating data contained within the changed file regions comprises communicating the data in a order that is independent of a write order.

24. (Original) The computer readable storage medium of claim 21, wherein the method further comprises communicating is conducted as directed by policies related to replication.

25. (Original) The computer readable storage medium of claim 21, wherein the method further comprises invoking point-in-time image replication services.

26. (Original) The computer readable storage medium of claim 21, wherein the method further comprises saving information regarding the file regions that have changed since the first point-in-time image replication instance.

27. (Original) The computer readable storage medium of claim 21, wherein the method further comprises tracking file regions is conducted in response to write operations.

28. (Original) The computer readable storage medium of claim 21, wherein the method further comprises saving information regarding the storage regions that have changed since the first point-in-time image replication instance.

29. (Original) The computer readable storage medium of claim 21, wherein the point-in-time image comprises a snapshot.

30. (Currently Amended) A file system driver ~~change tracking data structure~~ for use in conducting point-in-time replication operations, comprising:

a change tracking data structure within the file system driver, the change tracking data structure comprising:

a block index configured to logically identify blocks associated with a selected volume;

a block address configured to indicate a physical location of a block within a storage device;

a status indicator configured to indicate whether a change has been made to a block since a previously conducted point-in-time replication operation; and

a file index configured to identify a file associated with a selected data block.